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One World. One Smart Choice.™

TWIN

Simultaneous Two Position Charger

Owner's Manual

A7595-0181 Rev L

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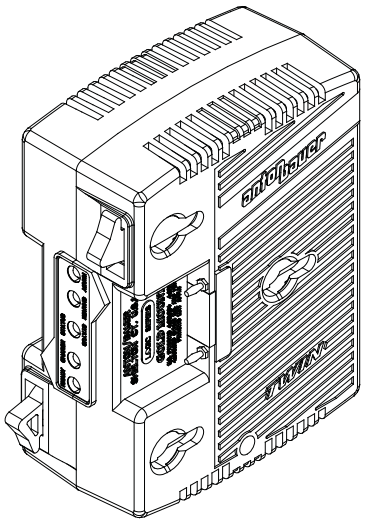
INTRODUCTION

The TWIN is a simultaneous Two Position charger for all Anton/Bauer® Gold Mount® Batteries. Its lightweight and small size makes it an ideal charger for travel. As a simultaneous charger each position operates independently allowing two batteries to charge at the same time. (see battery charge times pg 3.)

The TWIN is fully compatible with all current and future Anton/Bauer Logic Series® batteries and delivers all the advancements and proven reliability of InterActive® charging. Like all Anton/Bauer chargers, everything is automatic. Once a battery is placed on the TWIN, the charger will evaluate the battery and then execute the proper charge routine.



STANDARD FEATURES

- Simultaneous Charging for all Anton/Bauer Logic Series® batteries.
- Full InterActive technology including six simultaneous charge termination systems, Balance and Rejuvenation modes, and LifeSaver® Maintenance mode.
- Wide range mains input compatibility (100-240 VAC 50-60 Hz) automatically adapts to any mains source worldwide.
- Expanded InterActive® communications with DIGITAL batteries, anticipating new cell technologies.
- Slim, ultra-lightweight design for easy portability.

This unit was packaged at the factory to arrive intact at its destination. If there is any damage to the packaging or the unit when received, please notify the carrier immediately.

SAFEGUARDS

Power Sources: This unit was designed to operate at mains voltges from 100 to 240 Volts AC, 50-60 Hz.

Risk of Electrical Shock: Refer servicing to qualified service personnel.

Important: When powering charger using a generator, the generator must produce a sine wave or modified sine wave output, otherwise the charger may be damaged.

TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE.

APPARATUS SHALL NOT BE EXPOSED TO DRIPPING OR SPLASHING, AND NO OBJECTS FILLED WITH LIQUIDS SUCH AS VASES, SHALL BE PLACED ON THE APPARATUS.

GROUNDING/EARTHING

IMPORTANT WARNING: THIS APPARATUS MUST BE EARTHED.

To ensure safe operation, the three pin plug supplied must be inserted only into a standard three-pin power point that is effectively grounded through the normal household wiring. Extension cords used with the equipment must be three-conductor and be correctly wired to provide connection to earth ground. Improperly wired extension cords are a dangerous electrical hazard.

The fact that the equipment operates satisfactorily does not imply that the power point is properly grounded and that the installation is completely safe. If any doubt exists about the correct grounding of the power point, consult a qualified electrician.

IMPORTANT: The wires in this main lead are colored in accordance with the following code:

Green and yellow	Earth
Blue	Neutral
Brown	Live

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OPERATION

Self-Test: Upon applying mains power, each TWIN will initiate a self-test mode. This mode is indicated by the LED's on the unit. Each position will light the red LED followed by the green LED. Upon completion of the self-test, the green status light will light steadily, indicating that the unit is ready for operation.

Charging: As with all Anton/Bauer chargers, charging with TWIN is fully automatic. Mount any applicable battery to any open Gold Mount® position on the charger and it will automatically determine the appropriate charge routine and execute it.

IMPORTANT: In order to ensure correct operation when charging the Titan TWIN should be positioned with cooling vents vertical as shown in the Figure on page 1.

Applications: The TWIN models will charge any combination of Anton/Bauer Logic Series® Gold Mount® batteries including models: ProPac® 13/14, Compac® 13/14, Trimpac® 13/14, ProFormer®, Digital ProPac® 13/14, Digital Compac® 13/14, Digital Trimpac® 13/14, Dionic® and InterActive® 2000 HyTRON™ batteries.

Each TWIN incorporates the exclusive Anton/Bauer InterActive communication between battery and charger, which allows the charger to identify any Anton/Bauer battery attached and determine the precise charge routine for that battery under the prevailing conditions.

This information is communicated to the charger by the battery and is incorporated, through specialized programming and algorithms to optimize the charging of the DIGITAL battery.

IMPORTANT: Due to the specialized communications between the charger and the battery, batteries without the Logic Series® construction and communication capability (manufactured by Anton/Bauer before 1989 as well as so-called "rebuilds") can not be charged with this TWIN. The InterActive® communication of Logic Series® batteries is the key which allows the TWIN to safely identify and address new style and chemistry batteries as they are developed. Moreover, this communication ensures that batteries contain the quality cells, workmanship and safety of genuine Anton/Bauer products. If non-Logic Series® batteries are placed on the TWIN, the red and green LED indicators will flash alternately. This indication means that the battery cannot communicate its identity to the TWIN and is not charging.

THREE STAGE CHARGING METHODOLOGY

In general, the TWIN Charger will deliver a **three stage charge routine** to each battery.

1. **STAGE ONE** will deliver a charge matched to the capabilities of the battery. During this stage, six separate cutoff methods are in operation, simultaneously, ensuring the fastest, safest charge for that battery:

   TCO - Temperature cutoff that stops the Stage one charge precisely when a temperature indicative of full charge is reached;

   Dt/dT - A microprocessor based algorithm that measures a rise in temperature over a specific time, very accurately indicating full charge. This method is also the recommended method for charging Ni-MH technology;

   ΔV - A method to determine the end of stage one charging by identifying a characteristic "reverse slope" of a Ni-Cd cell. Since this characteristic can be disguised by the age, temperature and the number of the cells in a battery, it can never be employed alone;

   CCO - This method requires the identification of the particular battery size (capacity) and chemistry, an exclusive Anton/Bauer Logic Series® feature. The charger determines the maximum charge time for the particular battery and uses this information to ensure that overcharge conditions are avoided.

   FUL - This determination is made when a fully charged DIGITAL battery is returned to a TWIN within specified parameters of time, temperature, and battery voltage. The DIGITAL battery communicates its fully charged condition and the charger confirms the parameters and immediately indicates a fully charged condition, without additional verification.

   TEMPERATURE COMPENSATED VCO – For HyTRON™ series of batteries. Similar to a VCO, however, only operates within certain temperature parameters.

2. **STAGE TWO** charging is a BALANCING or "equalize" mode which calculates each battery pack type to offset any imbalance of the battery's cells, created by unequal self discharge or any capacity mismatch of the individual cells in the pack. This stage can vary in duration from zero to as much as 16 hours, depending on the condition of the battery. A battery will typically leave Stage Two in 2-4 hours under average operating conditions.

3. **STAGE THREE** charging is the Anton/Bauer exclusive Lifesaver® maintenance mode. This patented pulse routine keeps batteries fully charged, free from self-discharge - indefinitely - without damaging heat associated with a so-called "trickle charge".

NOTE: Anton/Bauer strongly recommends that batteries are kept on the TWIN until ready for use. The Lifesaver® mode will keep them 100% charged and ready for use.

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OPERATION CONTINUED

REMOVAL OF AC MAINS POWER

Anton/Bauer recommends that batteries remain on the charger and plugged into AC mains for best results. If AC mains power is removed, it is highly recommended that the batteries be removed from the charger, thus avoiding any additional self-discharge by the battery.

LED INDICATIONS

Each charge position of a TWIN has a pair of LEDs (one red, one green) that indicate the status of the battery attached to that position. The following table identifies all of the TWIN® indications and their meaning:

LED INDICATION	MEANING
Alternating Red & Green	Indicates that the TWIN is evaluating the battery and/or communicating with a DIGITAL battery, loading battery parameters and determining the appropriate charge routine. A low voltage (<11V) battery will cause this indication to continue until the battery is "rejuvenated" to a safe charging voltage. NOTE: This indication will continue if a non-Anton/Bauer Logic Series® battery is mounted on the charger. These batteries cannot identify themselves to the TWIN and will not be charged.
Steady Red	Indicates that the battery is being held by the TWIN to stabilize an out-of-range temperature condition.
Flashing Red	Indicates that the battery is currently under Stage One charge.
Flashing Green	Indicates that the battery is currently under Stage Two charge.
Steady Green	Indicates that the battery is READY and in Stage Three Lifesaver® mode.

NOTE: In some cases, a battery may be discharged to a very low voltage level at which the battery is unrecognizable to the charger when first attached. In this case, no indications will appear on the LED display. Each TWIN constantly looks for such batteries, applying small, safe amounts of charge current to each empty charge position. This search mode occurs continuously.

CHARGE TIMES

The following are approximate charge times for Anton/Bauer Logic Series batteries.

ProPac® 13/14	3 ½ hours
Digital ProPac® 13/14	3 ½ hours
Trimpac® 14	2 ¼ hours
Digital Trimpac® 14	2 ¼ hours
ProFormer®	1 ½ hours
HyTRON™ 50	2 ½ hours
HyTRON™ 120	6 hours
HyTRON™ 140	7 hours
Dionic® 90	5 hours
Dionic® 160	8 hours

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FCC NOTICE

This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

This equipment has been approved by one or more agencies. All changes and/or modifications not expressly approved by Anton Bauer, Inc. could void the users' warranty and authority to operate this equipment. There are no serviceable parts in this equipment.

SPECIFICATIONS

Dimensions:	6.00 L x 5.50" W x 2.50" H
Weight:	18 ounces
Input Voltage:	100-240 VAC, 50-60 Hz

Anton/Bauer warrants the operation and specifications of this unit only when used with Anton/Bauer batteries. Use of any other battery may be contrary to US Patent Law and the International Safety Standard Approvals, which this unit carries.

The mains input of the TWIN is fused using a printed circuit board mounted device that should be replaced ONLY by a qualified service technician.

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LIMITED WARRANTY

This one (1) year limited warranty for the battery product specified in this document ("Product") is given by Anton/Bauer, Inc. ("Anton/Bauer"), 14 Progress Drive, Shelton, Connecticut 06484. If you (the purchaser of the Product from Anton/Bauer, or the person for whom the Product was purchased, if it was a gift) have any questions regarding Product applications, Product specification, or to obtain warranty service on this or any Anton/Bauer product, contact the company at the address above.

THIS PRODUCT MUST BE REGISTERED WITH ANTON/BAUER WITHIN 30 DAYS OF PURCHASE TO ASSURE WARRANTY COVERAGE. TO REGISTER YOU MAY EITHER:

(1) MAIL WARRANTY REGISTRATION CARD or (2) REGISTER ON LINE AT www.antonbauer.com

Warranty registration, including the serial numbers of Anton/Bauer chargers used with this battery, must be supplied to Anton/Bauer. Anton/Bauer will warranty the Product only against defects in material and workmanship for the period as follows from the date of purchase, in accordance with the terms set forth below, and then, only if the Product is used exclusively in conjunction with compatible Anton/Bauer chargers. If this battery is returned to Anton/Bauer for warranty service it will be required that you provide model names and serial numbers of compatible Anton/Bauer chargers with which this product was used.

This warranty shall be effective only if Anton/Bauer receives notice of such defects in materials or workmanship during the period of the warranty. Minimum battery capacity is defined under this warranty as 60% of nominal specified capacity for this Product at time of purchase.

The liability of Anton/Bauer hereunder is expressly limited to a claim for repair or replacement of the Product or as otherwise stated herein at Anton/Bauer's sole discretion. Notice of any claim under this warranty shall be delivered to Anton/Bauer during the period of the warranty and the Product shall be returned with its packaging promptly, at your expense, to an Anton/Bauer Customer Support Center or to the address above. Upon receipt of the Product and a record of your compliance with the conditions of this warranty, Anton/Bauer will repair or replace the Product and return it to you, or issue a credit, as applicable. You are responsible for all shipping and handling charges to and from authorized facility.

THIS WARRANTY DOES NOT APPLY TO AND IS VOID IN THE CASE OF DEFECTS OR DAMAGE RESULTING FROM ACCIDENTS, DISASTER, NEGLECT, MISUSE, IMPROPER INSTALLATION, IMPROPER OR UNAUTHORIZED SERVICE OR MAINTENANCE, UNAUTHORIZED REPLACEMENT PARTS OR ATTACHMENTS; OR DYSFUNCTION OR MALFUNCTION OF, OR CAUSED BY, ANY OTHER PRODUCT OR DEVICE**. Misuse includes any use of the Product in other than its intended application, including the use of this Product with any charging device or accessory not manufactured by and/or specified by Anton/Bauer. This warranty does not cover, and Anton/Bauer assumes no responsibility for, any equipment or devices used in conjunction with the Product.**

ANTON/BAUER DISCLAIMS ANY LIABILITY FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES FOR BREACH OF ANY WRITTEN OR IMPLIED WARRANTY OF THE PRODUCT. UNDER NO CIRCUMSTANCES WILL ANTON/BAUER BE RESPONSIBLE FOR ANY SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES.

This Warranty is to be construed and enforced in accordance with the law of the State of Connecticut, including the provisions of the Uniform Commercial Code as adopted and from time to time amended in the State of Connecticut, and not the Convention for the International Sale of Goods. This choice of Connecticut law is exclusive of any Connecticut law that would require reliance on any law foreign to Connecticut. Should any action of law or in equity be brought by any person under this Warranty, such action shall be brought only in the United States District Court for the District of Connecticut, or in any Superior Court in Fairfield County, Connecticut, USA. Some states do not allow limitations on how long a warranty lasts, so the time period limitation herein may not apply to you. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights and you may have other legal rights which may vary from state to state.

Use of unauthorized equipment in conjunction with Anton/Bauer products constitutes misuse under our warranties and may limit or void those warranties. Anton/Bauer does not authorize, condone, recommend, or otherwise assume any liability or responsibility resulting from the use of any battery, charger, or accessory made by Anton/Bauer with any battery, charger or accessory not manufactured, produced or sold by Anton/Bauer. Anton/Bauer only authorizes the use of original Anton/Bauer products with

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